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Environmental Restoration Project Quality Procedure

for: **Design Field Change**



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Revision Log

<i>Revision No.</i>	<i>Effective Date</i>	<i>Prepared By</i>	<i>Description of Changes</i>	<i>Affected Pages</i>
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Design Field Change

Table of Contents

1.0	PURPOSE	4
2.0	SCOPE	4
3.0	TRAINING	4
4.0	DEFINITIONS	4
5.0	RESPONSIBLE PERSONNEL	7
6.0	PROCEDURE	7
6.1	Initiate Design Field Change	7
6.2	Maintain Design Change Notice (DCN) Log	7
6.3	Perform Design Change Reviews	8
7.0	LESSONS LEARNED	9
8.0	RECORDS	9
9.0	REFERENCES	9
10.0	ATTACHMENTS	10
	Design Change Notice Request	11
	Instructions for QP Interim Change Notice	12
	Design Field Change Process Flow Chart	13

List of Acronyms and Abbreviations

A/E	architectural/engineering
DCC	Document Control Coordinator
DCN	design change notice
ER	environmental restoration
LANL	Los Alamos National Laboratory
PTL	Project Team Leader
QP	quality procedure
QPPL	Quality Program Project Leader
RSA	request for subcontract action

Design Field Change

1.0 PURPOSE

This quality procedure (QP) states the responsibilities and describes the process for the use and control of design field change initiated to effect changes in Environmental Restoration (ER) Project approved-for-construction design drawings and specifications.

2.0 SCOPE

- 2.1 All **ER Project personnel** shall implement this mandatory QP when performing design field change for the ER Project.
- 2.2 **Subcontractors** performing work under the ER Project's quality program shall follow this QP when implementing and controlling design field change as part of the overall design process for the ER Project.

OR

- 2.3 **Subcontractors** may use the subcontractor's procedure when implementing and controlling design field change as part of the overall design process, as long as the substitute meets the requirements prescribed by the ER Project Quality Management Plan, and the ER Project's Quality Program Project Leader (QPPL) approves the procedure before the subcontractor begins the designated activity.

3.0 TRAINING

- 3.1 **ER personnel** shall train to and use the current version of this QP; contact the author of this QP if the text is unclear.
- 3.2 **ER personnel** using this QP shall document training in accordance with QP-2.2, in the training database is located at <http://erinternal.lanl.gov/Training/login.asp>.
- 3.3 The responsible **supervisor** shall monitor the proper implementation of this procedure and ensure that the appropriate personnel complete all applicable training assignments.

4.0 DEFINITIONS

- 4.1 *Architectural/engineering (A/E)*—A firm or organization selected to perform design and/or engineering services.

- 4.2 *Design*—The set of approved plans, criteria, procedures, specifications, and drawings governing all work on the project. This includes construction contracts, contractor purchase orders, and industry codes and standards invoked by the design.
- 4.3 *Design agent*—The organization assigned the responsibility for formulation of the design in accordance with established plans and procedures. Normally this is an Architect/Engineer or a Construction Contractor.
- 4.4 *Design field change*—A change to drawings, specifications, or other design documents used to make physical changes to structures, systems or components; or a non-physical change to documents to provide documentation of changes to specifications, design inputs, set-points, as-built information, or changes to address nonconforming items dispositioned for “use-as-is” or “repair” issues. Design field change controlled by this procedure may occur prior to, during, or after construction.
- 4.5 *Design Change Notice (DCN)*—The document used to control changes to engineering drawings, specifications, and other design media (including vendor documents) that have been issued as “Approved for Construction”. The DCN has the same authority as a revision to the affected document, and is effective upon approval by the assigned University Technical Representative.
- 4.6 *Design documents*—Technical documents, including technical design reports, design drawings, specifications, and criteria documents that govern the performance of design and construction activities.
- 4.7 *Design inputs*—Those criteria, parameters, design bases, regulatory requirements, contractual requirements, customer expectations or other design requirements upon which detailed final design is based and are found to be technically correct and complete. Design inputs may include design bases, health and safety considerations, expected life cycle, performance parameters, codes and standards requirements, reliability requirements, standard engineering data, general engineering knowledge, and specific sources of controlled data, as follows:
- Standard engineering data consists of commonly available engineering properties (e.g., structural steel shapes, common pipe dimensions, water properties etc.).
 - General engineering knowledge consists of basic engineering fundamentals (e.g., Ohm’s Law, structural beam moment calculation, and Bernoulli Equations), and
 - Specific sources of controlled data that include written and traceable input. This information includes other technical design calculations, drawings, codes, standards, specifications, safety analysis reports, as-

built walkdown reports, technical papers, manufacturer's data, and other supporting information.

- 4.8 *Design Objective*—Those features of a design that satisfy the functional and performance requirements; comply with environmental documentation and/or permit requirements, and provide a safe construction and operating environment.
- 4.9 *Design Output*—Technically correct design documents that meet the end-user's requirements such as drawings and specifications, test and inspection plans, maintenance requirements, report and other documents which are used to define and support technical requirements of structures, systems components, and material used during fabrication and/or construction and computer programs. Design output documentation may include as-built drawings and shop drawings that verify actual configuration of design implementation.
- 4.10 *Design Process*—Processes that translate design input into design output documents that are technically correct and are compliant with the end-user's requirements. Design processes address aspects critical to the performance, safety, or reliability of the designed items (e.g., dose and risk assessments, procurement, manufacturing, assembling, construction, testing, inspection, maintenance, and decommissioning).
- 4.11 *Design Review*—A documented, traceable, review consisting of examination, comments, evaluation, and resolution that ensures any given design clearly, accurately, and completely describes the technical requirements of the item and to verify the detailed design is maintained within the requirements specified in baseline documents. The number of reviews and level of Design Review Team participation shall be based on Title I, II and III requirements, project type, and stage of the project.
- Note:** Focus is on compliance with design criteria, codes, regulations, DOE Orders and standards, the Los Alamos National Laboratory (LANL) Engineering Manual and standards of practice; adequacy to economically fulfill the intended operational functions; and constructability and maintainability.
- 4.12 *Design Review Manager*—The senior representative from the Focus Area responsible for implementation of the design and who is responsible for coordination and oversight of design reviews.
- 4.13 *Design verification*—A formal process of consisting of technical reviews, peer reviews, alternate calculations, and qualification testing which may include previous verifications of similar designs or verifications of similar features of other designs. Design verification may also incorporate inspections, acceptance testing, assessments, or otherwise determining and

documenting whether items, processes, services, or documents conform to specified requirements.

5.0 RESPONSIBLE PERSONNEL

The following personnel are responsible for activities identified in this procedure.

- Architect/Engineer
- Contract Administrator
- Design Agent
- Design Review Manager
- ER Project Personnel
- Project Team Leader
- Quality Program Project Leader
- Subcontractors
- Supervisor
- Task Leader
- University Technical Representative (UTR)

6.0 PROCEDURE

6.1 Initiate Design Field Change

6.1.1 The **Design Agent** and/or the **Project Team Leader** shall initiate design field change (as defined above) to approved-for-construction design drawings and specifications.

6.1.2 The **Design Agent** and/or the **Project Team Leader** shall prepare the design field change Notice (DCN) using the Design Change Notice Form, Attachment A, with the concurrence of the UTR.

Note: Attach additional documentation (e.g., marked-up drawings, specifications), as required, to clearly describe the proposed change.

6.1.3 The **Design Agent** and/or the **Project Team Leader** shall specify the problem or design field change, identifying the effected design documents (drawings, specifications), including the revision of the document addressed in the DCN Form.

6.2 Maintain Design Change Notice (DCN) Log

The **UTR** shall maintain a DCN Log, making appropriate entries as the DCN-processing activities occur.

6.3 Perform Design Change Reviews

- 6.3.1 The **UTR** shall review the DCN in order to confirm that the DCN does not conflict with the governing Statement of Work, work plans, or other contractual or approval documentation.
 - 6.3.2 If conflicts are identified, the **UTR** shall ensure appropriate changes are made to any effected documents.
 - 6.3.3 The **UTR** shall control the DCN, e.g., log the DCN in a DCN Control Log, assign a Document Catalog Number in accordance with QP-4.10, and enter the catalog number on the DCN form in the block provided.
 - 6.3.4 The **UTR** shall submit the DCN for review and approval based on the assigned management level and review level required for the approved design documents in accordance with QP-6.3 (reference the review and signature block on the DCN form).
 - 6.3.5 The **Design Review Manager** shall coordinate design reviews in accordance with QP-6.3.
 - 6.3.6 Prior to final approval, the **UTR** shall review the DCN for adequacy and completeness.
 - 6.3.7 **Reviewers** shall return DCNs not approved by all reviewers with comments to the Project Team Leader for rework or voiding as required by QP-6.3.
 - 6.3.8 The **Project Team Leader** shall resubmit reworked DCNs for re-review and approval (e.g., repeat the review/approval process from section 6.3.5 above).
 - 6.3.9 The **UTR** shall document all voided DCNs, e.g., mark, note in a DCN Control Log, and retain as a record.
 - 6.3.10 Upon completion of the review and approval process, the **UTR** shall submit the completed DCN to the Project Team Leader for final approval and release for implementation.
 - 6.3.11 The **Project Team Leader** shall control all approved DCNs, e.g., document in a DCN Control Log, file, and transmit to the Records Processing Facility in accordance with QP-4.4.
- Note:** Only design documents that reviewed, approved, and issued are authorized for use.
- 6.3.12 The **Project Team Leader** shall remove and distribute separately the Cost & Schedule Impacts.

Note: Distribute only the first page and technical attachments as controlled documents. Retain a copy in ER Project files.

- 6.3.13 Upon completion of a DCN incorporation into effected design documents, the **UTR** shall sign and date the "All Documents Revised" block on a copy of the DCN Form, returning it to the Project Team Leader.
- 6.3.14 The **UTR** shall note in the revision block, those DCNs incorporated in the revision of the document.
- 6.3.15 The **UTR** shall perform required follow-up, i.e., prepare, expedite for approval, and transmit Request for Subcontract Action forms (RSA) associated with DCNs to the Contract Administrator.

7.0 LESSONS LEARNED

- 7.1 Before performing work described in this QP, **ER personnel** should go to the Department of Energy Lessons Learned Information Services home page, located at <http://www.tis.eh.doe.gov/II/II.html>, and/or the LANL Lessons Learned Resources web page, located at http://www.lanl.gov/projects/lessons_learned/, and search for applicable lessons.
- 7.2 During the performance of work, **ER personnel**, if appropriate, shall identify, document, and submit lessons learned, in accordance with QP-3.2.

8.0 RECORDS

The **UTR** shall submit the following records to the Records Processing Facility, in accordance with QP-4.4.

- 8.1 Design Change Form (hard copy and electronic copy)
- 8.2 Completed Document Signature Form
- 8.3 Associated correspondence
- 8.4 Associated hardcopy e-mail
- 8.5 Associated oral communication records

9.0 REFERENCES

To properly implement this QP, ER Project personnel should become familiar with the contents of the following documents, located at http://erinternal.lanl.gov/home_links/Library_proc.shtml:

- ER Project Quality Management Plan

- QP-2.2, Personnel Orientation and Training
- QP-3.2, Lessons Learned
- QP-4.4, Record Transmittal to the Records Processing Facility
- QP-4.10, Document Development and Transmittal Process: Peer Review Not Required
- QP-4.12, Documenting Oral Communication
- QP-6.3, Design Review
- LANL-LIR 230-01-02, Graded Approach for Facility Work,
<http://int.lanl.gov/documents/>
- LANL-LIR-220-03-0, Facility Engineering Manual,
<http://www.lanl.gov/f6stds/pubf6stds/xternhome2.html>

10.0 ATTACHMENTS

The user of this QP may locate all forms associated with this QP at <http://erinternal.lanl.gov/Quality/user/forms.asp>.

Attachment A: Design Change Notice and Instructions (2 pages)

Attachment B: Design Field Change Process Flow Chart (2 pages)

Design Change Notice Request

Page(s)

Section I: Description of Change (Requester completes)		1. Document Catalog No.: ER200 -
2. Design Change Notice No.:		3. Project/Project ID No.:
4. Is the Proposed Activity in Scope: <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Order of magnitude cost estimate to implement solution \$	
6. Task/Subtask(s) Affected:	7. Potential Schedule Impact: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, Number of days:	
8. Contract modifications required: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Cost <input type="checkbox"/> Cost + Fee <input type="checkbox"/> No Cost		
9. Design review required: <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, authorization required prior to implementation) <input type="checkbox"/> Engineering <input type="checkbox"/> Quality		
10. Activity/Change Description: (Attach additional pages if necessary)		
11. Affected Contractual Documents:		
12. Recommendations:		
13. Requester: _____ (Print name, then sign) (Date) _____ (Organization/Phone No./Email Address)		
Section II: Evaluation and Approval (QPPL and the Project Team Leader complete)		
14. Evaluation Remarks: (If none enter N/A)		
15. Project Team Leader: _____ (Print name, then sign) (Date)		
16. QPPL: _____ (Print name, then sign) (Date)		
QP-6.8, R0		Los Alamos National Laboratory Environmental Restoration

Instructions for QP Interim Change Notice

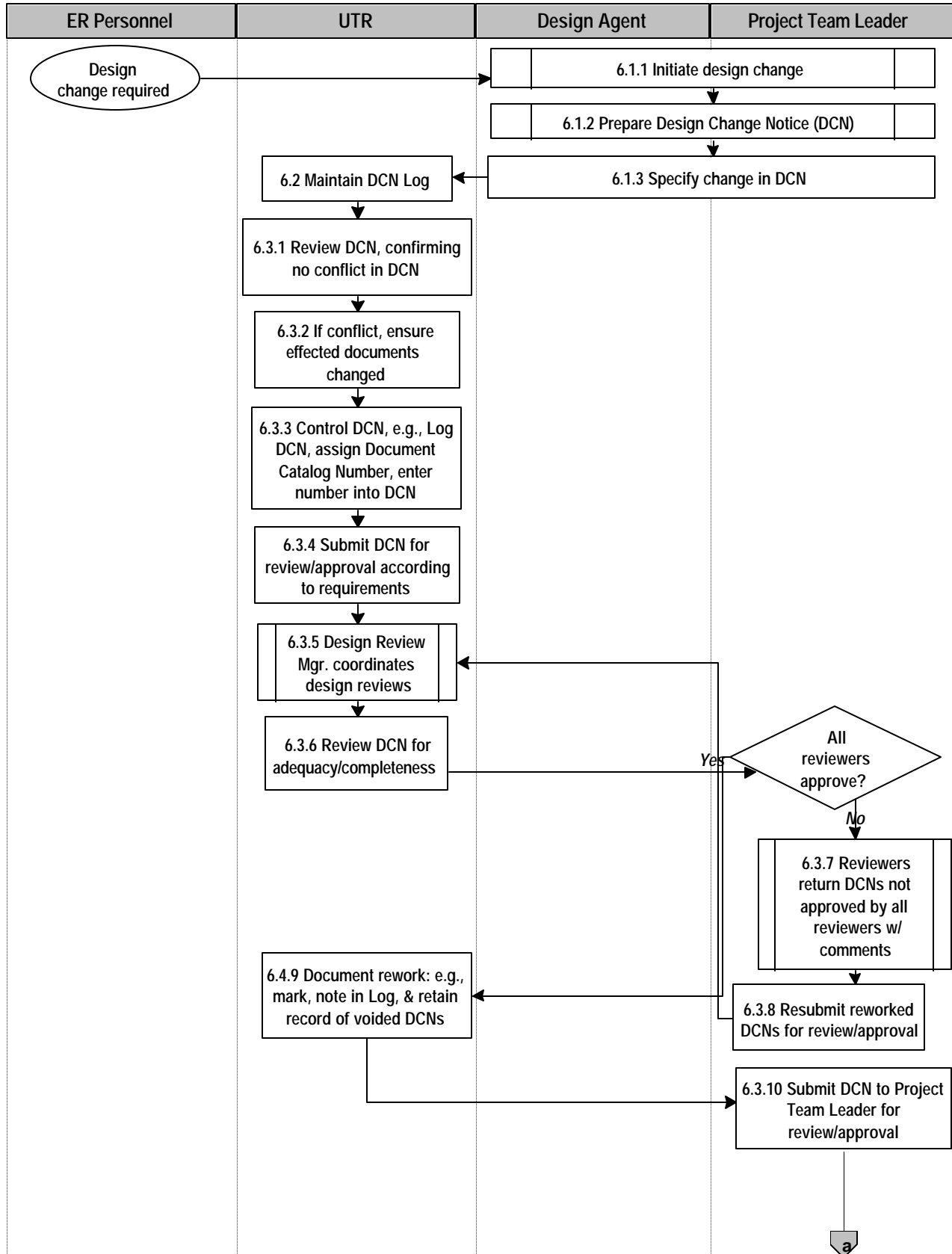
Section 1: Description of Change (Requester Completes)

1. Enter the document catalog number.
2. Record the procedure number.
3. Record the current revision and interim change number, as applicable. (The Document Catalog Number shall be used as the ICN). The Document Catalog Number is obtained in accordance with QP-4.9 and is located on the ER Project internal homepage <http://128.165.52.52/DocCatalog/home.asp>.
4. Record the procedure title.
5. Describe the change. Provide marked-up copies of the procedure or attach additional sheets, as necessary.
6. Identify whether procedure attachments were modified, added, or removed. If "yes," identify the affected attachments.
7. Provide a clear and concise justification for the interim change notice.
8. Enter a printed and signed signature and date.

Section 2: Evaluation and Approval (QPPL and Project Team Leader Complete)

9. Record any evaluation remarks; if none, enter N/A.
10. Record the name of the responsible Project Team Leader, sign, and date.
11. Record the name of the QPPL, sign, and date.

Design Field Change Process Flow Chart



Design Field Change Process Flow Diagram (Cont.)

